



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/288,966	04/09/1999	HIROSHI GOTO	018655-773	8072

21839 7590 02/12/2003

BURNS DOANE SWECKER & MATHIS L L P  
POST OFFICE BOX 1404  
ALEXANDRIA, VA 22313-1404

EXAMINER

ROGERS, SCOTT A

ART UNIT PAPER NUMBER

2624

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/288,966	Applicant(s) GOTO ET AL.	
	Examiner Scott A Rogers	Art Unit 2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17-24 and 29-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-24 and 29-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 08/323,924.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other:  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 24, 29-32, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al (US 4698778).

#### Referring to claim 24:

Ito et al disclose a multi-tone image processing method comprising:

receiving a plurality of image data wherein each image data represents a tone level (col. 15, lines 20-26);

specifying a pattern from a plurality of patterns, each of said plurality of patterns defining a number of recording operations and positions of recording operations within a specific range, wherein each pattern represents a specific tone level and at least one of the patterns has a larger number of recording operations than another of the patterns that represents a darker tone level within the specific range (col. 6, line 49 to col. 7, line 8); and

generating recording data for executing recording operations by reviewing the pattern specified for each image data (col. 15, line 34 to col. 16, line 8).

Referring to claim 29:

Ito et al disclose a multi-tone image processing apparatus for converting multi-tone image data representing a tone level of a multi-tone image to binary image data, said apparatus comprising:

a memory which stores a plurality of patterns representing a plurality of tone levels, respectively, each of said plurality of patterns having effective cells and non-effective cells and defining a number of effective cells and positions of effective cells within a specific range, wherein at least one of the patterns has a larger number of effective cells than another of the patterns that represents a darker tone level within the specific range (col. 6, line 49 to col. 7, line 8, and col. 19, lines 10-29); and

a converter which specifies one of said plurality of patterns stored in said memory according to the tone level of the multi-tone image data to be converted and converts the multi-tone image data to the binary image data based on the specified pattern (col. 15, line 34 to col. 16, line 8).

Referring to claim 30:

Ito et al further disclose the multi-tone image processing apparatus according to claim 29 wherein each of said plurality of patterns is constituted by a matrix in which each element of an  $m \times m$  square matrix is divided into  $k$  cells in a row directions (col. 7, line 57 to col. 8, line 31).

Referring to claim 31:

Ito et al disclose a multi-tone image recording apparatus comprising:

a memory which stores a plurality of patterns representing a plurality of tone levels, respectively, each of said plurality of patterns having effective cells and non-effective cells and defining a number of effective cells and positions of effective cells within a specific range, wherein at least one of the patterns has a larger number of effective cells than another of the patterns that represents a darker tone level within the specific range (col. 6, line 49 to col. 7, line 8, and col. 19, lines 10-29);

a converter which specifies one of said plurality of patterns stored in said memory according to the tone level of the multi-tone image data to be converted and converts the multi-tone image data to the binary image data based on the specified pattern (col. 15, line 34 to col. 16, line 8); and

a printer which prints the image according to the binary image data converted by said converter (col. 19, lines 45-46).

Referring to claim 32:

Ito et al further disclose the multi-tone image recording apparatus according to claim 31 wherein said converter includes an X-address counter, a Y-address counter and a Z-address counter, said Z-address counter specifying one of said patterns in the memory, and the X-address counter and the Y-address counter specifying one of said cells of the specified pattern according to horizontal and vertical printing operations of said printer (col. 22, lines 12-31, and col. 23, line 36 to col. 24, line 11).

Referring to claim 35:

Ito et al disclose a multi-tone image recording apparatus for recording an image based on multi-tone image data representing tone levels on an image, said recording apparatus comprising:

a converter which converts multi-tone image data into recording data so that at least two tone levels are realized by differentiating positions of recording dots within a specific range while a lighter tone level has a smaller (not larger as erroneously claimed) number of recording dots than a darker tone level within the specific range (col. 6, line 49 to col. 7, line 8, and col. 15, line 34 to col. 16, line 8); and

a printer which receives the recording data from said converter and records the recording dots based on the recording data (col. 19, lines 45-46).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over a combination of Ito et al and Ema et al (US 5258780).

Referring to claims 17-23:

Ito et al disclose a multi-tone image recording apparatus comprising a memory which stores a plurality of patterns corresponding to a plurality of tone levels, respectively, each of said plurality of patterns defining a number of recording dots and the positions of the recording dots within a specific range, at least two of said plurality of patterns being identical in the number of the recording dots but different in the positions of the recording dots within said specific range for realizing different tone levels.

Ema et al disclose a multi-tone image recording apparatus wherein patterns of recording dots are formed by exposure patterns ( $m \times n$  matrix) defining a number of irradiation spots of a laser beam, said recording apparatus comprising:

- a photosensitive member (photosensitive drum 21) which moves in a sub-scanning direction;

- a laser optical system including a semiconductor laser for selectively generating a laser beam that scans said photosensitive member with a spot of the laser beam in a main scanning direction substantially perpendicular to said sub-scanning direction (abstract and col. 7, line 52 to col. 8, line 2);

- a developing device which develops areas irradiated by the spot of the laser beam with developer (col. 8, lines 2-5, and col. 10, lines 64-65);

- a controller which receives multi-tone image data representing a tone level of a multi-tone image and specifies one of said plurality of exposure patterns in response to

the multi-tone image data (col. 17, lines 6-13, and "drive data generating means" in claims 2 and 3); and

a driver which drives said laser optical system to control generation of the laser beam by reviewing the exposure pattern specified by said controller and generating pulse width modulation laser driving signal in the main scanning direction to generate a laser beam of the same or variable intensity and to switch the laser on and off, corresponding to the exposure pattern (col. 17, lines 13-28, and "driving means" in claims 2 and 3).

It would have been obvious one of ordinary skill in the art to combine Ito et al and Ema et al in such a manner as to apply the improved resolution and smoothness techniques for multi-tone image processing and recording as taught by Ito et al with the laser beam printer for multi-tone image reproduction as taught by Ema et al.

Claims 33-34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al as applied to claims 31 and 35, respectively above, and further in view of Ema et al.

Referring to claims 33-34 and 36:

Ema et al disclose a multi-tone image recording apparatus (laser beam printer) including a light source which emits a light beam (semiconductor laser 10), a driver which drives said light source based on the binary image data (laser controller 13), an image carrier which moves in a vertical direction (photosensitive drum 21), and a deflector which deflects said light beam in a horizontal direction and scans said image



carrier to form an image on said image carrier (polygon mirror 14, lens 15, and mirror 16).

It would have been obvious one of ordinary skill in the art to combine Ito et al and Ema et al in such a manner as to apply the improved resolution and smoothness techniques for multi-tone image processing and recording as taught by Ito et al with the laser beam printer for multi-tone image reproduction as taught by Ema et al.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 35 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

On line 6 of claim 35, the term "larger" should actually be ---fewer---.


### ***Reissue Applications***

The original patent, or a statement as to loss or inaccessibility of the original patent, must be received before this reissue application can be allowed. See 37 CFR 1.178.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A Rogers by telephone at 703-305-4726 and by e-mail address at [scott.rogers@uspto.gov](mailto:scott.rogers@uspto.gov).

The official fax number for Technology Center 2600 where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2600 Customer Service at 703-306-0377.

  
**SCOTT ROGERS**  
**PRIMARY EXAMINER**

10 February 2003